

Ecological site R030XC010NV SHALLOW SANDSTONE HILL 7-11 P.Z.

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General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

Ecological site concept

This site occurs on summits and sideslopes of mountains. Slopes typically range from 15 to 50 percent. Elevations are 3500 to about 5600 feet. The soils associated with this site are very shallow to sandstone bedrock and have formed in residuum or colluvium from sandstone. Please refer to group concept R030XB094CA to view the provisional STM.

Associated sites

R030XC007NV	SHALLOW GRAVELLY LOAM 7-9 P.Z.
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Similar sites

R030XB014NV	SHALLOW GRAVELLY LOAM 7-9 P.Z. BOER4 and PLRI3 codominant
R030XB057NV	SHALLOW GRANITIC LOAM 5-7 P.Z. PLRI3 present
R030XC007NV	SHALLOW GRAVELLY LOAM 7-9 P.Z. ACSP12 dominant grass
R030XC018NV	SHALLOW GRAVELLY SLOPE 11-13 P.Z. ACSP12 dominant grass
R030XB015NV	SHALLOW GRAVELLY SLOPE 7-9 P.Z. BOER4 and PLRI3 codominant
R030XA094NV	SHALLOW GRAVELLY LOAM 5-7 P.Z. ACHY and ACSP12 codominant grasses

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Coleogyne ramosissima</i>
Herbaceous	(1) <i>Achnatherum parishii</i> var. <i>depauperatum</i> (2) <i>Achnatherum hymenoides</i>

Physiographic features

This site occurs on summits and sideslopes of mountains. Slopes typically range from 15 to 50 percent. Elevations are 3500 to about 5600 feet.

Table 2. Representative physiographic features

Landforms	(1) Mountain
Elevation	1,070 – 1,710 m
Slope	20 – 50 %
Aspect	Aspect is not a significant factor

Climatic features

The primary air masses affecting the Spring Mountains are cold maritime polar air from the Gulf of Alaska and warmer, moist maritime subtropical air from lower latitudes. Occasionally there are invasions of cold continental polar air from northern Canada or the Rocky Mountains. Precipitation in the area results primarily from the passage of cyclones with associated fronts during fall, winter and spring; from closed cyclones in late winter and spring; and from the flow of moist tropical air from the southeast to the southwest quadrant in the summer.

Average annual precipitation is 8 to about 12 inches. Mean annual air temperature is 50 to 56 degrees F. The average growing season is about 140 to 200 days.

Table 3 Representative climatic features

Frost-free period (average)	200 days
Freeze-free period (average)	
Precipitation total (average)	310 mm

Influencing water features

There are no influencing water features associated with this site.

Soil features

The soils associated with this site are very shallow to sandstone bedrock and have formed in residuum or colluvium from sandstone. Available water capacity is very low. Infiltration is rapid and permeability is moderate. The surface has very high amounts of cobbles and gravels. These soils are dry most of the year but are moist for short periods during the winter and early spring months and occasionally for short intermittent periods following summer convection storms. The soils are classified as Lithic Torriorthents.

Table 4. Representative soil features

Surface texture	(1) Extremely gravelly loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderate
Soil depth	40 – 50 cm
Surface fragment cover <=3"	40 – 50 %
Surface fragment cover >3"	10 %
Available water capacity (0-101.6cm)	3.56 – 3.81 cm
Calcium carbonate equivalent (0-101.6cm)	20 – 60 %
Electrical conductivity (0-101.6cm)	Not specified
Sodium adsorption ratio (0-101.6cm)	0 – 10
Soil reaction (1:1 water) (0-101.6cm)	7.9 – 10
Subsurface fragment volume <=3" (Depth not specified)	40 – 50 %

Subsurface fragment volume >3" (Depth not specified)	10 %
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Ecological dynamics

Please refer to group concept R030XB094CA to view the provisional STM.

As ecological condition declines, cool-season perennial grasses decrease as blackbrush becomes more dominant. Following fire blackbrush decreases or is removed from the community, while species such as buckwheat and ephedra increase in density. Singleleaf pinyon and Utah juniper will also increase on this site.

Fire Ecology:

Low amounts of fine fuels in interspaces probably limited fire spread in blackbrush communities to only extreme fire conditions, during which high winds, low relative humidity, and low fuel moisture led to high intensity stand-replacing fires. Historical fire return intervals appear to have been on the order of centuries, allowing late seral blackbrush stands to reestablish. Blackbrush stands are subject to fire, and fire will start and spread easily due to the dense, close spacing nature and resinous foliage of blackbrush. Blackbrush is slow to reestablish. It is generally removed from the site. Fire effects on Stansbury cliffrose are variable. Fire may kill or severely damage plants. Late-season fire also increases the risk of mortality. Stansbury cliffrose is a weak sprouter that is generally killed by severe fire. Following fire, Virgin River encelia depends on off-site seed rather than on-site sprouts for regeneration. Green ephedra generally sprouts vigorously from the roots or woody root crown after fire and rapidly produces aboveground biomass from surviving meristematic tissue. Needlegrasses are damaged by burning due to the dense plant material that can burn slowly and long, charring to the growing points. Late summer and early fall fires are the least harmful. Indian ricegrass can be killed by fire, depending on severity and season of burn. Indian ricegrass reestablishes on burned sites through seed dispersed from adjacent unburned areas. Muttongrass is unharmed to slightly harmed by light-severity fall fire. Muttongrass appears to be harmed by and slow to recover from severe fire.

State and transition model

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
Grass/Grasslike					
1	Primary Perennial Grasses			50-174	
	little Parish's needlegrass	ACPAD	<i>Achnatherum parishii</i> var. <i>depauperatum</i>	28-84	—
	muttongrass	POFE	<i>Poa fendleriana</i>	11-45	—
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	11-45	—
2	Secondary Perennial Grasses			1-28	
	desert needlegrass	ACSP12	<i>Achnatherum speciosum</i>	3-11	—
	sideoats grama	BOCU	<i>Bouteloua curtipendula</i>	3-11	—
	James' galleta	PLJA	<i>Pleuraphis jamesii</i>	3-11	—
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	3-11	—
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	3-11	—
Forb					
3	Perennial Forbs			1-28	
	globemallow	SPHAE	<i>Sphaeralcea</i>	3-17	—
4	Annual Forbs			1-28	
Shrub/Vine					
5	Primary Shrubs			331-448	
	blackbrush	CORA	<i>Coleogyne ramosissima</i>	280-336	—
	Stansbury cliffrose	PUST	<i>Purshia stansburiana</i>	28-56	—
	Virgin River brittlebush	ENVI	<i>Encelia virginensis</i>	11-28	—
	mormon tea	EPVI	<i>Ephedra viridis</i>	11-28	—

6	Secondary Shrubs			21-34	
	Utah agave	AGUT	Agave utahensis	6-11	–
	slender buckwheat	ERMI4	Eriogonum microthecum	6-11	–
	sulphur-flower buckwheat	ERUM	Eriogonum umbellatum	6-11	–
	Joshua tree	YUBR	Yucca brevifolia	6-11	–
Tree					
7	Trees			7-22	
	Utah juniper	JUOS	Juniperus osteosperma	3-11	–
	singleleaf pinyon	PIMO	Pinus monophylla	3-11	–

Animal community

Livestock Interpretations: This site is suited to grazing by livestock during the late spring, summer and early fall. Grazing management should be keyed to perennial grass production. Attentive grazing management is required due to steep slopes and erosive soil surface condition. Blackbrush is not preferred as forage by domestic livestock, but does provide some forage during the spring, summer and fall. Stansbury cliffrose is an important browse species for livestock, especially in the winter. Encelia has no forage value for domestic livestock. Green ephedra is heavily browsed by livestock on winter range but only moderately or lightly browsed during other seasons. Little Parish's needlegrass provides a palatable, nutritious feed during the spring and early summer for livestock. Indian ricegrass is highly palatable to all classes of livestock in both green and cured condition. It supplies a source of green feed before most other native grasses have produced much new growth. Muttongrass is excellent forage for domestic livestock especially in the early spring. Muttongrass begins growth in late winter and early spring, which makes it available before many other forage plants. Stocking rates vary over time depending upon season of use, climate variations, site, and previous and current management goals. A safe starting stocking rate is an estimated stocking rate that is fine tuned by the client by adaptive management through the year and from year to year. Wildlife Interpretations: Blackbrush is a valuable browse species for bighorn sheep. It may also comprise up to 25% of the mule deer winter diet. Blackbrush provides cover for upland game birds, nongame birds and small mammals. Stansbury cliffrose is an important browse species for mule deer, pronghorn, game birds, and songbirds. Wild ungulates use it heavily in winter. Virgin River encelia is important to the desert tortoise as a source of succulent forage in periods of low moisture. Encelia is a browse species of desert mule deer and desert bighorn sheep. Green ephedra is an important browse species for big game animals. Green ephedra is heavily used by wildlife on winter ranges. Little Parish's needlegrass provides a palatable, nutritious feed during the spring and early summer for wildlife. Indian ricegrass is eaten by pronghorn in moderate amounts whenever available. A number of heteromyid rodents inhabiting desert rangelands show preference for seed of Indian ricegrass. Indian ricegrass is an important component of jackrabbit diets in spring and summer. Indian ricegrass seed provides food for many species of birds. Doves, for example, eat large amounts of shattered Indian ricegrass seed lying on the ground. Deer and elk make heavy use of muttongrass, especially in early spring when other green forage is scarce. Depending upon availability of other nutritious forage, deer may use muttongrass in all seasons. Muttongrass cures well and is an important fall and winter deer food in some areas.

Hydrological functions

Runoff is very high. Permeability is moderate.

Other products

Indian ricegrass was traditionally eaten by some Native American peoples. The Paiutes used seed as a reserve food source.

Other information

Blackbrush contributes to desert fertility by 1) protecting the soil against wind erosion through retarding the movement of soil and increasing the accumulation of fine soil particles around its base; 2) protecting understory vegetation from the effects of high temperatures, thereby helping to retain surface nitrogen and adding organic matter to the soil; and 3) serving as a nitrogen reservoir through the storage of nitrogen in roots, leaves, and stems. Indian ricegrass is well-suited for surface erosion control and desert revegetation although it is not highly effective in controlling sand movement.

Type locality

Location 1: Clark County, NV	
Township/Range/Section	T23S R58E S28

General legal description	About 6 miles northwest of Goodsprings, Spring Mountains, Clark County, Nevada.
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Other references

Fire Effects Information System (Online; <http://www.fs.fed.us/database/feis/plants/>).

USDA-NRCS Plants Database (Online; <http://www.plants.usda.gov>).

Contributors

TJ WOLFE

Approval

Sarah Quistberg, 2/25/2025

Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	
Contact for lead author	
Date	08/30/2026
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. Number and extent of rills:

2. Presence of water flow patterns:

3. Number and height of erosional pedestals or terracettes:

4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):

5. Number of gullies and erosion associated with gullies:

6. Extent of wind scoured, blowouts and/or depositional areas:

7. Amount of litter movement (describe size and distance expected to travel):

8. Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):

9. Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):

10. Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:

11. Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):

12. Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):

Dominant:

Sub-dominant:

Other:

Additional:

13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):

14. Average percent litter cover (%) and depth (in):

15. Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):

16. Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:

17. Perennial plant reproductive capability:
